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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,969	07/30/2001	Roger Stringham	2923.03-2.1	3144
7590	10/17/2005		EXAMINER	
Brian I. Marcus, Esq. Vierra Magen Marcus Harmon & DeNiro LLP 685 Market Street, Suite 540 San Francisco,, CA 94105			AWAI, ALEXANDRA F	
			ART UNIT	PAPER NUMBER
			3663	
DATE MAILED: 10/17/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/918,969	STRINGHAM, ROGER
	Examiner	Art Unit
	Alexandra Awai	3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 22 August 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-30 is/are pending in the application.
 - 4a) Of the above claim(s) 18,23,24 and 30 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-17, 19-22 and 25-29 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In accordance with the final restriction requirement to Group 1, Species A and Species M, claims 1-30 are pending, and claims 18, 23, 24 and 30 have been withdrawn. Claims 1-17, 19-22 and 25-29 have been examined.

Response to Arguments

2. Applicant's arguments filed 8/22/2005 have been fully considered but they are not persuasive. Applicant states (Remarks, p. 7) that the previous examiner's arguments regarding objections and rejections in the 2/17/2005 Office Action focus on a single general point. That is, the fact that prior attempts at cold fusion and excess heat generation have not been reproducible. The literature, case law, and examples pertaining to prior attempts at producing anomalous heat were meant to illustrate that the burden of proof for having an operative embodiment of the present invention has not been met (see In re Dash et al). Accordingly, the rejections and objections of the prior Office Action dated 2/17/2005 are incorporated herein *in their entirety* by reference, and particularly relevant arguments will be restated and expounded in the sections to follow.

The aforementioned general point is *not* the only important challenge to patentability that the previous examiner brought to light. Indeed, the previous examiner mentioned several technical and scientific issues that cast questions of relevant prior art into relief. It is in view of these important questions that the objections and rejections on the grounds of enablement and adequate written description were made. Persuasive arguments as to the adequacy of the

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disclosure and the patentability of the invention must unequivocally explicate both the controversial physics in question, and how and in what manner the invention achieves its stated, and arguably incredible, object.

On page 15 of the 2/17/2005 Office Action, it is stated that the “absence of radiation is itself considered as evidence that no nuclear reactions were actually taking place.” Atomic reactions may result in reaction products and thermal radiation, but nuclear reactions result in *particle radiation and electromagnetic radiation only*. The heat obtained from neutronic fusion reactions *must* come from the kinetic energy of the resultant particles because harnessing electromagnetic radiation for heat or electricity is extremely problematic and most of the energy is not carried away by charged particles. In fact, gamma rays are far more penetrating and less ionizing than charged particle radiation, and it seems clear that any gammas produced within the invention would simply pass right through it, rather than having their energy absorbed by the working fluid (i.e. the light water). Therefore, the *absence of radiation* is **inseparable** from the *absence of heat*, much less heat above and beyond the energy used to operate the invention.

The previous examiner discusses at length the challenges of producing the non-radiative products as disclosed by the applicant, due to the choice of heavy water as the fusion fuel source (2/17/2005 Office Action, pp. 11+). With about 50% probability, deuterium-deuterium (DD) fusion results in an energetic ^3He particle and a more energetic neutron. The other half of the time, the result is an energetic tritium particle and a more energetic proton. It is only through a vanishingly small margin of error that ^4He and the accompanying gamma ray are likely to result. The disparity in reaction probabilities is due to the fact that the Coulomb barrier is vastly greater for the latter reaction than for the two former reactions, requiring energies even higher than those

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disclosed by the applicant as being produced during sonoluminescence – said disclosed values already being much higher than is commonly accepted as plausible. The applicant does not show how this third and least likely reaction is the only one that occurs within the invention. For example, it is not clear that a high frequency transducer is capable of producing temperatures of up to 1,000,000° K, and the value of “something between 20,000° and 1,000,000° Kelvin” (Specification, p. 4) is decidedly inexact and below the temperature required for the D + D → $^4\text{He} + \gamma$ reaction to take place.

In view of the scientific challenges discussed above, the technical aspects of the written description are clearly inadequate. The applicant is required to explain how the components that comprise the apparatus overcome these scientific problems, and how the applicant has put to rest the controversy surrounding the amounts of heat and pressure produced during sonoluminescence. Because, according to the applicant, the posited invention has overcome these technical challenges, its construction is singularly puzzling, and a disclosure of a particular structure with a complete set of accompanying operating parameters is required for skilled artisans to make and use it. For example, note that the specification recites that the “watts in” equals all of the measured *heat* inputs (Specification, p. 25), and so the applicant has not explicitly shown that this value includes *all* energy inputs, including the power used to operate various auxiliary components of the apparatus. In fact, the heat input (Graph 1, p. 24) term appears both incomplete and unclear, as the unit of watts is more accurately applied in power measurements, and it is not clear how a measurement of heat in versus heat out is relevant, when sonic energy and electricity are employed by the invention rather than thermal energy. Ambiguities such as these render the specification inadequate.

As stated by the applicant, no device has ever successfully produced excess heat from fusion facilitated by sonic energy. The subject matter is clearly not well-understood by those skilled of the art of nuclear fusion or electronics, and so precise ranges or values for each component's dimensions, chemical composition, energy consumption, arrangement, mass flow rate, efficiency, etc. are required for enablement. Statements such as the "generation of He4 accounts for some of the excess heat measured" (Specification, p. 27) must be qualified and explained in terms of the established physics. The inventor has *not* provided a sufficient disclosure, enabling a person skilled in the art to make and practice the invention without undue experimentation and has *not* overcome the arguments and evidence provided in this and previous correspondence.

Specification

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure, as set forth in the 2/17/2005 Office Action and further explained above.

Claim Rejections - 35 USC § 112

5. Claims 1-17, 19-22 and 25-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement as set forth in the 2/17/2005 Office Action and section 2 of this Office Action.
6. Claims 1-17, 19-22 and 25-29 are rejected under 35 U.S.C. 112, first paragraph, because the best mode contemplated by the inventor has not been disclosed, as set forth in section 7 of the 2/17/2005 Office Action.
7. Claims 1-17, 19-22 and 25-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. The added material which is not supported by the original disclosure is that “at least part” of the catalytic material is selected from a group of certain metals, and that the matrix configuration optimizes combination that is not controlled. The original disclosure only supports subject matter in which a substantial part of the catalytic material is composed of a member or members of the stated group of metals. That is, a catalytic material containing only a fraction of a percent of the catalytic metal is not enabled or described, but it is encompassed by the currently amended claim. Additionally, combination that is *not* controlled is not supported within the specification – note that optimization necessitates a degree of control.
8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 1-17, 19-22 and 25-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims remain vague, indefinite and incomplete, largely as set forth in the 2/17/2005 Office Action. Terms such as "isotopic", "at least", "to position...in a manner...to optimize", "combination", "in a liquid form", and "high energy bubbles" are not adequately defined within the claims and so allow for a myriad of spurious interpretations that are not disclosed by the specification. For example, all hydrogen atoms are technically isotopic, and the combination of atoms most accurately refers to the formation of ionic or covalent bonds.

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-17, 19-22 and 25-29 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by a credible asserted utility as set forth above and in the 2/17/2005 Office Action.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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13. Claims 25, 26 and 29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Flynn as set forth in the 2/17/2005 Office Action. With regard to the applicant's arguments, note that it is not the device *per se* of the Flynn *disclosure* that is distinct from the present apparatus, but rather the *theory or interpretation* of sonoluminescence-facilitated fusion. As they are broadly and ambiguously claimed in the present application, the embodiments can literally be construed as combinations of well-known devices (i.e. heat exchangers, sonic horns, reactor vessels, connecting ducts, etc.), distinguished from the prior art of record *only* by virtue of the fact that they have allegedly succeeded in producing anomalous heat. However, the applicant has not convincingly communicated that anomalous heat *was* actually produced (note that requested experimental data is not readily available, section 17 below), or under what conditions said heat was produced. Therefore, this *single* non-obvious/inherent distinguishing feature is not established, and neither is patentability.

14. Claims 1-8, 10, 11, 15-17, 19, 21, 22, and 25-29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Fujimura, as set forth in the 2/17/2005 Office Action. With regard to the applicant's arguments, note that the reference teaches and suggests the inclusion of the features of the present device. Furthermore, it is the bubbles that undergo cavitations, said bubbles not being actively claimed, but rather being an aspect of the *intended operation* of the apparatus (i.e. the combination of sound wave production means, bubble producing means, hydrogen isotope, etc. – all of which are disclosed by Fujimura), which is not lent patentable weight.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 1-17, 19-22 and 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Sugano, Kasahara *et al*, or Pavelle *et al* alone, or in view of either Liebert *et al* or Drexler as set forth in the 2/17/2005 Office Action. Note again that the applicant's arguments are drawn to cavitation phenomena. It is sonoluminescence that operates by cavitation, although the specifics of that operation remain in question. The *theory* of sonoluminescence-facilitated fusion is *not* actively claimed. The system itself is claimed, and said system is anticipated by the prior art.

17. Applicant's complete response for information under 37 C.F.R. 1.105 is acknowledged. However, the information is still requested when it becomes available. It would appear that if the information were to Applicant's benefit (i.e. providing possible evidence of enablement), Applicant would spend the necessary resources to make the documentation available to the Office as soon as possible. Vice versa, the same is true. If the evidence does not support utility, Applicant would not provide the necessary resources to ensure that the Office is provided with the requested documentation. The information is still required.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Awai whose telephone number is (517) 272-3079. The examiner can normally be reached on 8:30-5:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AA

October 13, 2005

JACK KEITH
SUPERVISORY PATENT EXAMINER